

Rudiments Mapping -- An Axiomatic Approach to Music Composition

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Abstract

Be it art, music, text, mathematics or computer languages, when represented digitally or otherwise, generically, they are “*formulated*” expressions. The difference lies in their manifestation as an audio or visual entity. Thus, understanding the rudiments of these art forms is pivotal to establishing their interconnectivities. As such, by identifying and characterizing the rudiments contained therein, by studying their inter activities yield important information for artists and composers alike, it offers new perspectives for composing music or otherwise.

Drawing from the author’s research and rich interdisciplinary experiences, this paper conceptualizes, compares and offers the similarities and differences, it presents the demystification of the incongruences of these art forms. It spells out the author’s approach to composing new music digitally: deriving from, and extending the dynamism of incorporating one art form into the other. As she paints and animates music, she seeks the audacity of creating the digitals with authenticity, optimizes and delivers the media by pushing the limits of the digital.

1 Introduction

The formula-laden composition school of thought and practices have been laid aside quietly by the author for the advancement of music authoring. From Bach to Bruchner, music was born out of creativity and emotion passionately and naturally by the ingenuity of these great composers, it was never rule based. To compose is to repose, to compose is to verbose, to juxtapose between notes and intervals, create melodies with harmonics and rhythms, arranged with a selected pitch at a desired tempo with an ensemble of selected musical instruments and or human voices. As such, these are elements of a musical composition, manuscripted to be sung or played or both (Richard L Crocker, 1966). In the last century, musical forms are studied, music composition rules are derived by analyzing the masterpieces of the works of great composers from Baroque to Modern Era. In order to create new music, does a composer need to anchor his composition on

these rule based tonal structures that have been derived? Unlike in medical sciences, does one need to decompose to compose, or one should disregard the past and break free? How many rules (Wallace Berry, 1987) should be retained or how much is desired and retained intentionally? If such retention is to be continued, will it affect future musical compositions, or dwelling on the past is *déjà vu* and *passé*. This paper examines these issues based on the author’s perspective and approach to music and her knowledge and experiences drawn from the field of visual art. It investigates her approach to composition, tools and techniques and method of delivery for multiple digital art forms and hence their convergence.

2 The Rudiments of Art Forms

On close codicological examination of individual primary sources of art, music, and text using the principle of identification and comparison of the attributes of these entities, it establishes the rudiments of these art forms. Fundamentally, it is a structured set of grammar with one or more character sets addressed by a set of syntax and semantics, to each its own. As such, the respective elements are formatted within its own structure with its own texturity founded on a set of processes, with a *known* methodology using an array of tools and techniques. With these given systems of symbols and structures, it is transmitted to and displayed by its own delivery medium by its own means, over its own space to its own audience as shown in the **rudiment matrix** in Figure 1. In the non-digital media, if music is a set of organized sound, then art is an organized surface(s) and text is a collection of organized words, whereas, in the digital media, music, art and text are further reduced or converge to binary format, that is, zeros and ones. However, there are distinctions that exist between these art forms and each conveys its own meaning. The meanings associated with these art forms can vary greatly across differing cultures and when used under various contextual understandings and personal styles of a viewer. Nevertheless, it is the properties and characteristics of these rudiments that sought to compliment and influence, leading to the dynamism of incorporating one art form from the other. (Lin Hsin Hsin, 2002)

3 Rudiments Mapping

If inspiration is an unexpected moment or a heuristic process, then upon the identification, characterization, comprehension, and traversing across the rudiment matrix within its own discipline and inter disciplines, the author researches and plots her own rudiments mapping voyage. In so doing, she interpolates and extrapolates the rudiments from one entity to other with its embedded attributes. By virtue of the intrinsic value of these rudiments, a dominant exponent in an art form can be translated, transfigured and transported to another art form, leading to possible *formulation* or composing one art form based on or using the methodology of the other. It can even transform one art form to the other intra and inter discipline. After all, art, music, text, mathematics are all expression processing, hence to an extent, logic centric, tools interface and process driven. As such, the conceptualization of the arts is based on visual thinking, pattern derivatives, highlights and contrast ratios, ornamentation whereas the realization of the arts is skill based and logic driven. With the deployment of appropriate tools such as a computer system with a pointing device, such as a two-button mechanical mouse and a discipline based art notational processor, digital art and digital music can be created. Thus, the segregation and delineation of disciplines can be considered as harmful; together with the rule based processes and procedure calls, it may deter genesis of new theories, destroys spontaneity and it is a disorientation to creativity.

Though rules and formal image studies or tonal structures (Allen Cadwallender and David Gagné, 1998), can emerge as a background or a fragmentary surface of what may have been primarily a conventional method of execution and realization tradition; rudiments mapping is a tightly coupled assimilation and integration of visual thinking, skills and development processes. It permits the simultaneity of rudiment-time axes processing, and hence it conceives and generates spatial movements. The permutation and combinatorics of one entity with the other spawns and permeates multiplicity and diversities, hence laboring the dawn of a new genre of art form. Together with the use of mathematics, though not necessarily algorithm driven, it can again open new and expand existing repertoire, while by harnessing the power of digital processing enhances and adds new dimensions to an existing art form and/or engenders, proliferates and propagates **new** art forms (Lin Hsin Hsin 2002).

4 Spatialization

Be it landscape or soundscape, it is a definition of the visual or the audio in space. It is a depiction of chiaroscuro imageries, static and/or dynamic or a temporal measure with mono or

polyphonic composition organized by simultaneity of imageries or sound layers embedded in art rituals or music liturgies when represented in non-digital formats. When the movement of sound purports imageries, it connotes *dance* using human body as a medium of expression in the conventional sense. However, when the delivery medium is digital, it is computationally feasible to generate an ordered set of pixels on screen, real or surreal, in tempo with a desired rhythm with a given pitch (Lin Hsin Hsin, 2001). The geometry of this process can be blended, thus blurred the boundaries of at least three art forms, viz: art (and even text), music and dance. In this case, the linearity of such establishment, discipline by discipline, entity by entity, is only observed in one dimension (as in the time axis); where by the deployment of digital processes, creation of multiple art forms can be conceived and developed concurrently. This is the notion of *art perceives art*, *art conceives art* and *art receives art*.

5 Delivery Medium

5.1 The Medium

In conventional representation, art and music are delivered over static or vibrational surfaces, installed or performed to an audience. The displayed surface is said to be *completed* at the point of publishing and revealing it to the viewers at an art exhibition or music performance. Directly or indirectly, the *completed* audio and/or visual entity has once cycled through the *compose-debug-edit-compose* process. Subsequently, the published medium is archived using the conventional method. In the digital arena, art and music can be composed and realized *end-to-end*, published with or without hard copies. Not only it offers the ease of composing, debugging and editing, it eliminates the need of conservation and preservation processes, and it is facilitated with storage retrieval functionalities. As to its query friendliness, though much research has been done, because of the complexity of images, image query (IBM, 1994 -2002) is still in its infancy, unlike the case of music.

5.2 Themes and Variations

In the case of digital art or sculpture, the completed soft copy may or may not be editable (8) to generate a new theme or a new version. However, a digital music composition permits the ease of generating new editions, versions, themes and variations readily.

5.3 The Deliverables

In all cases, digital entities have a much

broader distribution channel, they can all be distributed over the Web. Beyond this, collaborative efforts can be interactively implemented in a multi-user environment for both entities, in real time.

6 Authenticity

6.1 2D Painting

While software developers can package an infinite number of combinations of pixel composites to create more filters, more effects, the author has continuously research on the most commonly seen user interface, viz, the two-button mechanical mouse to innovate even more extensive brushstrokes (rudiment) which are **indistinguishable** from those created by the real world tools without texture mapping or scanning (Lin Hsin Hsin, 1998), as demonstrated in her repertoire of creations to date (Lin Hsin Hsin, 1997). As she asserts: it is important to **remove** and/or rectify the current paradoxical combinations of randomness and predictable structure within a 2-D image editor, as all of which are formulated by rigid rules and calculations, in which it was built with a complete user interface as an integral part of the simulation process systematized serendipity for producing an authentic digital brushstrokes by brushing digital paint and ink "into" the digital surface.

6.2 3D Sculpting

As in the case of digital sculpting, a 3D modeling tool provides basic geometry and shapes shading, texture mapping, lighting and other functionalities, the creation process is perhaps, fewer effects driven, hence allowing more room for user initiated modeling activities. Nevertheless, the author still prefers digital sculpting by mouse (Lin Hsin Hsin, 1998).

6.3 Composing Music

In composing music, the mouse is a vehicle for scripting musical notation on screen when deploying a music processor, simply, it is a tool used for digi-manuscripting music scores. The realization of instrumentation, is anchored on sound calibration, building digital musical instruments with computational skill in frequency processing -- to achieve an authentic pitch for western orchestra instruments and human voice within an audible range. This technique is also used to define new instruments. In so doing, this technique provides pitch texturities even *within* the same instrument, it completely eliminates the necessity and the use of a sound card and midi instruments.

From composing to performing, the

computational and digital processing power enabled instrument -- the computer, completely eliminates the baton, the conductor and the concert hall -- indeed, a much desired process for the digitally minded, but it may not be so desirable for those in the non-digital profession (David Cope, 2001).

7 The Issues

In art, as it is in music, current available tools, techniques, procedures and methodologies for rights protection is a necessary but insufficient provision. Those that have been offered by existing initiatives on sound (IBM, 2001) or image (Jian Zhao, Eckhard Koch and Chenghui Luo, 1998) identification, digital watermarking, embedded digital fingerprints, digital signatures and Web tracking (Terry Miura, Hal Berghel, 1997) in conjunction with the rights administration, distribution and management tools cannot withstand and combat with the hackers without a tamperproof computer system. To date, these measures have not ceased and will never stop the hackers and the challenge-minded driven individuals or organized groups from code breaking. Current technologies prevent (to some extents), deter but failed to survive the prevailing *decryptifying* human desire, thus it will continue to post never ending problems to content protection in the real world and cyberspace. As such, it is a potential problem faced by the creators and rights holders of the digital intellectual properties in the digital deliveries and cyber repositories (Lin Hsin Hsin, 1996). In view with the ongoing research and far too weak legal doctrines, it is hope that the cyberlegal fraternities will further cooperate with artistes to expedite the judicial options. Beyond this, the need for bullet proof fortification of the digital firewalls against intrusion and invasion.

8 Conclusions

As I have sought to define, compare and contrast the fundamental similarities and differences between art forms, the characteristics that identify an art form as one belonging to the real world, the digital or cyberspace, the elements and attributes of that identify the nature of discourse as didactic and prescriptive, the elements that mark this argument as essentially original. This shift of paradigm is manifested in definitions given to fundamental precepts, organization of the digital representations by entity, the *imposition* of a cross-boundary vocabulary, and, in certain treatises, a foray of learned and literary references of one discipline to the other, sharply in contrast with the theoretical tonal structure and rule-based dealings with measure in music as my approach in composing new music.

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References:

- 1) Lin Hsin Hsin, November 1997, *@rt: A Cyberart Show by Lin Hsin Hsin*
- 2) Lin Hsin Hsin, April 2001, *Solar Symphony*
- 3) Lin Hsin Hsin, October 2002, *Project BREAM report*
- 4) Lin Hsin Hsin, August 2002, *Project PING report*
- 5) Lin Hsin Hsin, June 1998, "Reduction to Pixels -- Using a Common Human Computer Interface to create 3D Artificial Realities", *Leonardo Electronic Almanac*, 6(5)
- 6) Lin Hsin Hsin, April 1999, "Every Pixel takes its own journey -- using a common human computer interface to create 2-D digital art", *Leonardo Electronic Almanac*, 7(3)
- 7) Lin Hsin Hsin, December 1996, "Cyberepositories -- for Glory or Myseries?", *Leonardo Electronic Almanac*, 4(12)
- 8) Terry Miura, Hal Berghel, November 1997, "Watermarking Cyberspace", *Communications of the ACM*, 40(11)
- 9) Jian Zhao, Eckhard Koch and Chenghui Luo, July 1998, "In Business Today and Tomorrow", *Communications of the ACM*, 41(7)
- 10) *Ultimedia Manager*, 1994 -2002, IBM
- 11) *Electronic Media Management System (EMMS)*, 2001, IBM
- 12) Allen Cadwallender and David Gagné, 1998, *Analysis of Tonal Music -- A Sckenerian Approach*, Oxford University Press
- 13) Wallace Berry, June 1987, *Structural Functions in Music*, Dover Publications
- 14) Richard L Crocker, 1966, *A History of Music Styles*, MacGraw Hill
- 15) David Cope, 2001, *Virtual Music -- Computer Synthesis of Music*, MIT Press